

系組：生命科學系三年級 日期節次：7 月 29 日第 4 節

科目：生物化學 (138-91)

單選題 (請選出一個正確的答案) / (每題各六分)

- Which of the following (下列的) molecule is found in RNA but not in DNA is:
 - adenine
 - cytosine
 - guanine
 - thymine
 - uracil
- Stereoisomers that are non-superimposable mirror images (不重疊鏡像) of each other are known as:
 - anomers
 - cis-trans isomers
 - diastereoisomers
 - enantiomers
 - geometric isomers
- The macromolecules that serve (可作...用) in the storage (儲藏) and transmission (傳送) of genetic (遺傳的) information are:
 - carbohydrates
 - lipids
 - membranes
 - nucleic acids
 - protein
- Osmosis is movement (移動) of a:
 - charged solute molecule (ion) across (穿過) a membrane (膜)
 - gas molecule across a membrane
 - water molecule across a membrane
 - polar solute (溶質) molecule across a membrane
 - nonpolar solute molecule across a membrane
- At the isoelectric pH of a peptide (蛋白質):
 - only the amino and carboxyl termini contribute (貢獻) charge
 - the amino and carboxyl termini are not charged
 - the total net charge (淨電荷) is zero (零)
 - there are four ionic charges
 - internal (內部的) amino acids of the peptide cannot have ionizable R groups

6. Which of the following statements (陳述) about protein-ligand binding (結合) is correct (正確的)?
- The K_a is equal (相等的) to concentration of ligand when all of binding sites (位置) are occupied (被佔有)
 - The K_a is independent (無關) of such conditions as salt concentration and pH
 - The larger the K_a (association constant), the weaker the affinity (親和性)
 - The larger the K_a , the faster is the binding
 - The larger the K_a , the smaller the K_d (dissociation constant)
7. Enzymes (酶) are potent (有效的) catalysts (催化劑) because they:
- are consumed (耗盡) in the reactions they catalyze
 - are specific (專一) and prevent (抑止) conversion (轉換) of products (產物) back to substrates (反應物)
 - drive (驅使) reactions to to equilibrium (平衡)
 - increase the equilibrium constants (平衡常數) for the reactions they catalyze
 - lower the activation energy for the reactions they catalyze
8. The oligoribonucleotide (核苷酸): 5'-ACGUAC-3':
- has 7 phosphate groups
 - the nucleotide at the 3' end is a purine
 - has an A at its 3' end
 - the nucleotide at the 5' end has a phosphate on its 5' hydroxyl
9. Which of the following is NOT true of all naturally occurring (天然的) DNA?
- Deoxyribose units are connected by 3',5'-phosphodiester bonds
 - The ratio A+T/G+C is constant for all natural DNAs
 - The amount of A always equals the amount of T
 - The two complementary strands are antiparallel (逆平行)
 - Two hydrogen bonds (氫鍵) form between A and T
10. Which of the following statements about sterols (固醇) is true?
- All sterols share a fused-ring (融合的環形物) structure with four rings
 - They are commonly found (通常發現) in bacterial (細菌的) membranes
 - Also found in plasma membranes and intracellular (細胞內的) membranes (mitochondria, lysosomes)
 - Sterols are soluble (可溶解) in water, but not in organic solvents such as chloroform

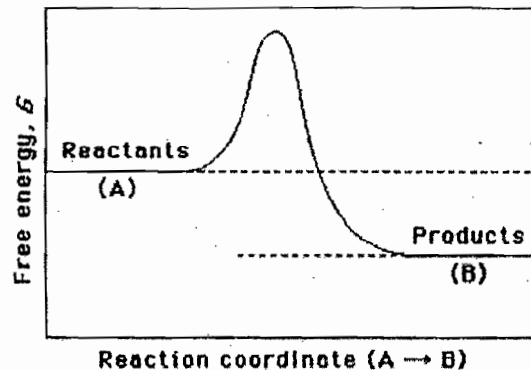
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11. Which of the following describes (描述) the overall (整體的) 3-D folding (折疊) of a peptide?
- A. 1° structure (結構)
 - B. 2° structure
 - C. 3° structure
 - D. 4° structure
12. Starch (澱粉) and glycogen (肝糖) are both polymers (聚合體) of:
- A. glucose
 - B. ATP
 - C. water
 - D. nucleic acid
13. In a double-stranded (雙股) nucleic acid, cytosine typically base-pairs (鹼基配對) with:
- A. adenosine
 - B. guanine
 - C. thymine
 - D. cytosine
14. Which of the following is NOT a fat-soluble vitamin (脂溶性維生素)?
- A. Vitamin A
 - B. Vitamin C
 - C. Vitamin K
 - D. Vitamin E

簡答題 (每題各八分)

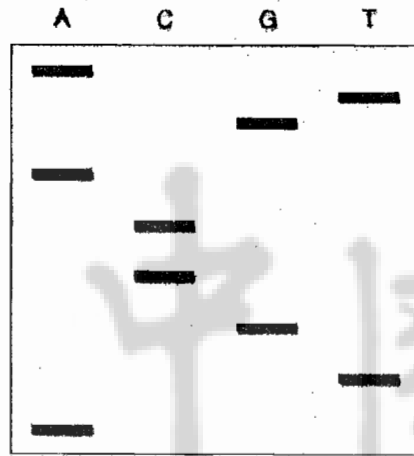
15.



參考以上的反應座標圖:

Is this an exergonic (放熱的) or endergonic (吸熱的) reaction?

16. A fragment (片段) of DNA is sequenced (定序) by Sanger's method (方法):



Please write out the complete sequence (完整序列) of this DNA fragment

本試題採
雙面印刷

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